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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,392	06/28/2001	Eric J. Horvitz	MS171134.1	6446

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EXAMINER

GODDARD, BRIAN D

ART UNIT	PAPER NUMBER
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2161

DATE MAILED: 08/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/894,392	Applicant(s) HORVITZ, ERIC J.	
	Examiner Brian Goddard	Art Unit 2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-8,10,11,13 and 15-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 42-44 is/are allowed.
- 6) ☒ Claim(s) 1,2,5-8,10,11,13,15-21,23-41 and 45 is/are rejected.
- 7) ☒ Claim(s) 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/25/05</u> . | 6) <input type="checkbox"/> Other: _____  |

*PD*

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 07 June 2005 has been entered.

2. Claims 1, 2, 5-8, 10, 11, 13 and 15-45 are pending in this application. Claims 1, 11, 18, 21, 24, 33, 39, 42, 43 and 45 are independent claims. In the Amendment filed 07 June 2005, claims 3, 4, 12 and 14 were cancelled, and claims 1, 2, 5, 7, 11, 13, 15, 16, 18, 20-25, 28, 29, 32-35, 37, 39 and 41-45 were amended. This action is non-final.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 is dependent upon cancelled claim 4 as written, and is therefore indefinite. Claims 6-8 are dependent upon claim 5 and therefore inherit this deficiency. In the interest of compact prosecution, the examiner assumes that claim 5 should depend from claim 1.

***Claim Rejections - 35 USC § 103***

4. Claims 1, 2, 5, 6, 11, 13, 15-21, 23-28, 30-37, 39-41 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,193,171 to Shinmura in view of the article entitled "Continual Computation Policies for Utility-Directed Prefetching" by Horvitz (hereinafter 'Horvitz').

Referring to claim 1, Shinmura discloses a system that facilitates maintaining an item substantially as claimed. See Figures 1-4 and the corresponding portions of Shinmura's specification for this disclosure. In particular, Shinmura teaches a system [See Fig. 1] that facilitates maintaining an item [file], comprising:

- a first data store [9] that stores the item in an active state;
- a second data store [10] that stores the item in an archived state; and
- an inference system [1] that inferentially determines [See Figs. 3-4] whether to store the item in an active or archived state based at least in part upon [See discussion of Step 47 (column 6, lines 34-47)]

- an assessment of the item's worth relative to other items actively stored [least recently used algorithm – compares all items to each other], wherein the item is stored

as active according to the space available in the first data store [usage capacity / free space] and the assessment of the item's relative worth [See above].

Shinmura's system does not explicitly perform "a cost-benefit analysis comparing an overhead cost attributable to storing the item in the active state to a benefit associated with storing the item in the active state, the benefit determined at least in part by calculating a probability a user will access the item in the future" as claimed. That is, Shinmura's probability of user access is not necessarily calculated by "probabilistic computations" and a "cost-benefit analysis", but is instead determined by past user accesses. Specifically, a file that has not been accessed by a particular user, or a file that is least recently accessed out of all of a user's files, has the lowest probability of user access in Shinmura's determination.

Horvitz discloses a system and method similar to that of Shinmura, wherein archived files are pre-fetched into active storage if they have a high probability of user access, but kept in archive storage if they have a low probability of user access. Specifically, Horvitz teaches performing a cost-benefit analysis [See Section 2, pages 175-179 (Specifically Sections 2.4-2.5)] comparing an overhead cost attributable to storing the item in an active state to a benefit associated with storing the item in an active state, the benefit determined at least in part by calculating a probability a user will access the item in the future [See Section 3, pages 179-181]; and performing an assessment of the item's worth ['utility'] relative to other items stored [goal is to prefetch the best – therefore requiring comparison of each item to every other], wherein the item is stored as active [prefetched into active storage] according to the space available in

the active data store, the cost-benefit analysis and the assessment of the item's relative worth.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement Horvitz' cost-benefit analysis and probabilistic computations in Shinmura's system to determine the probability of user access to a specific item and its usefulness by cost-benefit analysis as a basis for determination to archive the item or keep it active. One would have been motivated to do so in order to provide a more accurate, yet cost-effective means for determining probability of user access [as disclosed by Horvitz], instead of a simple choice of a non/least accessed item.

Referring to claim 2, the system and method of Shinmura in view of Horvitz as applied to claim 1 above (hereinafter 'Shinmura/Horvitz') discloses a system that facilitates maintaining an item as claimed. Shinmura/Horvitz teaches the system of claim 1, as above, further comprising: a property log [Shinmura: management catalogue 11] that stores user preferences gathered from implicit evidence [Horvitz: See Section 3, pages 179-181] obtained by monitoring user activity [Shinmura & Horvitz: item access], the inference system consulting the property log when making an inferential determination [Shinmura: See discussion of Step 47]" as claimed.

Referring to claims 5 and 6, Shinmura/Horvitz teaches the system of claim 1, as above, the inference system utilizing a value density of the item [Horvitz: See sections 2.4-2.5 on page 179 - Horvitz' decision to migrate an item is based on the flux of the item,  $\Psi(\text{segment})$ , which is the value density of an item, as claimed, given a constant

transmission rate (R) and a *Value*(Component) of 1.0 for a full file 'the maximal content for the document' (See lines 2-9 of the second column on page 179)] to perform the cost-benefit analysis [See above] as claimed. That is, Horvitz' equation of Section 2.5 can be reduced such that the flux [ $\Psi(\text{segment})$ ] divided by the transmission rate [R] = value density = the probability of user access given evidence [ $p(D|E)$ ] divided by the size of the item [*Size*(Component)] as claimed in claim 6, where *Value*(Component) = 1.0 for a full file migration and the transmission rate (R) is constant (and thus factored out).

Claim 11 is rejected on substantially the same basis as claim 1 above. See the discussion regarding claim 1, as well as the portions of Shinmura and Horvitz cited therein, for the details of this disclosure.

Referring to claim 13, Shinmura/Horvitz teaches the system of claim 11, as above, being temporally sensitive such that a determined utility of an item and storage inferences drawn therefrom [archive/recall processing] are continually updated over time [Shinmura: every time active storage space runs out or a file is added that is larger than the available active space] as claimed.

Claim 15 is rejected on the same basis as claims 5-6, in light of the basis for claim 13 above. See the discussions regarding claims 1, 5-6, 11 and 13 above for the details of this disclosure.

Referring to claims 16-17, Shinmura's (as modified by Horvitz) system employs a knapsack packing analysis [Space Allocation Processing] to determine how to store the item by considering respective value densities of items [See above] to determine which

items to store as active and which items to archive [archive/recall processing] as claimed.

Claim 18 is rejected on the same basis as claim 5. See the discussions regarding claims 1 and 5 above for the details of this disclosure.

Claim 19 is rejected on the same basis as claim 13, in light of the basis for claim 18 above. See the discussions regarding claims 13 and 18 for the details of this disclosure.

Claim 20 is rejected on the same basis as claim 16, in light of the basis for claim 19. See the discussions regarding claims 16 and 19 for the details of this disclosure.

Claim 21 is rejected on the same basis as claim 5. See the discussions regarding claims 1 and 5 for the details of this disclosure.

Claim 23 is rejected on the same basis as claim 18. See the discussion regarding claim 18 above for the details of this disclosure.

Claims 24-26 are rejected on the same basis as claim 5. See the discussions regarding claims 1, 2 and 5 above for the details of this disclosure.

Claims 27-28 are rejected on the same basis as claim 13, in light of the basis for claim 26. See the discussions regarding claims 13 and 26 above for the details of this disclosure.

Referring to claim 30, Shinmura/Horvitz teaches the system of claim 24 as above, further comprising an interactive user interface [14] as claimed. See Figures 1-4 and the corresponding portions of Shinmura's specification, as well as sections 2.4-2.5 of Horvitz' article for this disclosure.



Referring to claims 31-32, the system and method of Shinmura/Horvitz as applied to claim 30 above discloses the invention as claimed. The UI of Shinmura in view of Horvitz includes a selection element operative to allow a condition to be enabled/disabled and an entry element operative to allow a condition to be configured as claimed. See Shinmura's discussion of Steps 40-48 as well as section 2.5 of Horvitz' article for the details of this disclosure.

Claims 33-35 are rejected on the same basis as claim 16. See the discussions regarding claims 1, 2, 5 and 16 above for the details of this disclosure.

Claims 36-37 are rejected on the same basis as claim 13, in light of the basis for claim 35. See the discussions regarding claims 13 and 35 above for the details of this disclosure.

Claims 39-41 are rejected on the same basis as claim 16. See the discussions regarding claims 1, 2, 5 and 16 above for the details of this disclosure.

Claim 45 is rejected on the same basis as claim 32. See the discussions regarding claims 30-32 above for the details of this disclosure.

5. Claims 10, 29 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinmura in view of Horvitz as applied to claim 6 above, and further in view of U.S. Patent No. 6,199,103 to Sakaguchi et al.

Referring to claim 10, Shinmura's (as modified by Horvitz) inference system does not explicitly include a learning system that acts upon the inference system and modifies inferences made thereby as claimed.

Sakaguchi, discloses a system and method similar to that of Shinmura, including a learning system [7] that acts upon the inference system [2] and modifies inferences made thereby based upon at least one of: a property of the item, a property of a user, extrinsic data, a determined probability and a value density [See Fig. 3] as claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Sakaguchi's learning system to the system of Shinmura in view of Horvitz to obtain the invention as claimed. One would have been motivated to do so to more accurately gauge usefulness of an item, as disclosed by Sakaguchi.

Claim 29 is rejected on the same basis as claim 10, in light of the basis for claim 28 above. See the discussions regarding claims 1, 10 and 28 for the details of this disclosure.

Claim 38 is rejected on the same basis as claim 10, in light of the basis for claim 37 above. See the discussions regarding claims 1, 10 and 37 for the details of this disclosure.

### ***Allowable Subject Matter***

6. Claims 42-44 are allowed.
7. Claim 22 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. The following is a statement of reasons for the indication of allowable subject matter:

As discussed on page 19 of applicant's response filed 07 June 2005, neither Shinmura, Horvitz nor Sakaguchi taken alone or in combination teach or suggest the claimed determining of a one-shot item, and the discarding or archival of a one-shot item after it has been accessed once in combination with the remaining limitations of these claims. The examiner agrees with applicant's arguments that Sakaguchi's determination of junk-mail does not rise to the level of teaching required by the claimed determination of a one-shot item.

None of the prior art of record, taken alone or in combination, provides sufficient disclosure to teach or suggest this claimed feature, in combination with the remaining limitations of these claims.

### ***Response to Arguments***

9. Applicant's arguments filed 07 June 2005 have been fully considered but they are not persuasive.

Referring to applicant's remarks on pages 13-17 regarding the Section 103 rejections over Shinmura in view of Horvitz: Applicant argued that there is no motivation to combine the references other than via employment of hindsight reasoning.

The examiner disagrees for the following reasons: In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves

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or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, suggestion to combine is found in both the references themselves and the knowledge generally available to one of ordinary skill in the art. Specifically, suggestion can be found in Horvitz' fulfillment of a need to more accurately gauge probability of user access to a document/file, as disclosed in Section 3 of the Horvitz reference, in light of the simplistic measure of probability disclosed in Shinmura.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). The prior art references cannot be considered merely by themselves, as in a box, but must be construed in view of the knowledge available to one of ordinary skill in the art. The examiner maintains that one of ordinary skill in the art at the time the invention was made would readily recognize the mirror between archiving and prefetching, whether or not Horvitz mentions archiving or Shinmura mentions prefetching. The processes are simply too similar and too intertwined to ignore the mirrored similarities.

Finally, Shinmura does not teach away from the combination, contrary to applicant's assertions. That Shinmura does not mention weaknesses does not mean that weaknesses do not exist. The advantages of adding Horvitz' cost-benefit analysis and probabilistic computations to Shinmura's system are clear, as the examiner has spelled out previously. One of ordinary skill in the art at the time the invention was made would recognize these advantages as motivation for the combination. Applicant's conclusion does not logically follow from the facts in evidence.

Referring to applicant's remarks on pages 17-19 regarding the Section 103 rejections over Shinmura in view of Horvitz: Applicant argued that even if combined, Shinmura and Horvitz do not teach or suggest the claimed "relative utility" etc.

The examiner disagrees for the following reasons: In both Shinmura and Horvitz, the storage decision is based on the relative usage of files/items. That is, both references operate to determine the value of an item with respect to all other items available for storage, to pick the BEST item for active storage. Therefore, the combination of Shinmura and Horvitz does teach the claimed "relative" utility, "relative" value density, ordering of items, etc.

### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Goddard whose telephone number is 571-272-4020. The examiner can normally be reached on M-F, 9 AM - 5 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 571-272-4023. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bdg  
19 August 2005

  
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